

In the Specification

Amend the specification as follows:

Amend paragraph 0005 as follows:

Organic packaging technology improves on some of the limitations associated with ceramic packaging technology. Organic packages are mainly produced using photo-patterning processes, which are capable of producing much smaller wiring features compared to their ceramic counterparts. This allows for increased circuit densities and more compact designs. However, organic packages typically have lower thermal conductivity and a much higher coefficient of thermal expansion (CTE) when compared to ceramic substrates. These limitations may ~~result~~ result in thermally induced stresses during processing. Consequently, the use of organic packages may lead to inferior reliability for the assembled module, which includes the IC and the substrate.

Amend paragraph 0016 as follows:

The above and other objects, which will be apparent to those skilled ~~in art~~ in the art, are achieved in the present invention, which is directed to a method of filling vias in a silicon substrate, the method comprising: obtaining a silicon substrate having a plurality of via holes; filling the vias with a high-solids loading paste including a conductor material and a low CTE additive material; and sintering the silicon substrate and paste at a temperature for densification of the metal but not the low CTE additive material. The method further comprises having the paste in the range of 50 to 55 volume percent solids. The vias may be filled with a metal powder. The metal powder includes copper, silver or gold powder. Solvents and dispersants may be added to the high-solids loading paste. The paste may also

include a high-solids loading of approximately greater than 50 volume percent. Preferably, the paste has a suspension viscosity below approximately 1000 centipoise. The method further includes filling the vias with the low CTE additive comprising a conductor, an insulator, or mixture of both. The low CTE additive material may comprise glass. The low CTE additive material comprises silica, cordierite, spodumene, borosilicate glasses, mullite, beta eucryptite, tungsten, magnesium aluminosilicate, or molybdenum. The paste includes the low CTE additive material in a range of 20-80 volume percent. Preferably, the paste includes the low CTE additive material in a range of 50-75 volume percent. The paste includes an amount of the conductor material in the range of 20-80 volume percent. Preferably, the conductor material is in the range of 30-45 volume percent. The method further includes rheologically tailoring the paste to improve the filling of the vias by combining rheology modifiers. The combination of rheology modifiers is on the order of 0.1 volume percent. The sintering temperature of the conductor material is approximately ~~100°C less~~ 100°C less than the low CTE additive material sintering temperature.

Amend the paragraph 0017 as follows:

In a second aspect, the present invention is directed to a method of filling empty vias in a silicon substrate, the method comprising: placing the substrate in a vacuum chamber; drawing a vacuum in the vacuum chamber; flooding surfaces of the silicon substrate with a suspension; raising pressure in the vacuum chamber; wiping off excess suspension material; drying the silicon substrate; and sintering the substrate with filled vias. The suspension comprises a conductive material and a low CTE additive material. The suspension is

selected such that the conductive material has a sintering temperature approximately ~~100°C~~ less 100°C less than the low CTE additive material sintering temperature.

Amend the paragraph 0018 as follows:

In a third aspect, the present invention is directed to a suspension for filling via holes in silicon, comprising a high-solids loading paste including a conductive material and a low CTE additive material. The suspension further comprises having a portion of the suspension include solids in the amount of 50 to 55 volume percent. The suspension includes having the conductive material comprise a metal powder. The metal powder includes copper, silver or gold powder. The suspension also may include solvents and dispersants. The suspension includes a high-solids loading ~~of~~ of paste approximately greater than 50 volume percent. The suspension may have a viscosity below approximately 1000 centipoise. The suspension includes the low CTE additive comprising a conductor, an insulator, or mixture of both. The low CTE additive material comprises silica, corundum, spodumene, borosilicate glasses, mullite, beta eucryptite, tungsten, magnesium aluminosilicate, or molybdenum. The suspension may further include the low CTE additive material in a range of 20-80 volume percent, corresponding with an amount of the conductive material in the reciprocal range of 20-80 volume percent.